

RINGKASAN

Fusarium oxysporum merupakan jamur patogen penyebab penyakit layu fusarium pada tanaman. Patogen tersebut menjadi salah satu faktor pembatas dalam produktivitas beberapa tanaman hortikultura karena dapat menyebabkan gagal panen. Pengendalian penyakit layu fusarium menggunakan fungisida sintesis secara terus menerus dapat menyebabkan pencemaran lingkungan dan terjadinya resistensi patogen terhadap fungisida. Penggunaan agen pengendali hayati *Trichoderma* spp. yang bersifat antagonis terhadap patogen menjadi salah satu alternatif pengendalian yang ramah lingkungan. Selain menggunakan agen pengendali hayati, metode pengendalian kombinasi antara fungisida dengan jamur antagonis juga sudah mulai dikembangkan. Metode kombinasi tersebut dimungkinkan lebih efektif dalam mengendalikan patogen daripada penggunaan tunggal agen pengendali. Penelitian ini bertujuan untuk mengetahui dosis efektif fungisida iprodione yang kompatibel terhadap pertumbuhan *Trichoderma* spp., mengetahui dosis efektif fungisida iprodione dalam menghambat pertumbuhan jamur patogen *F. oxysporum*, serta mengetahui pengaruh penggunaan kombinasi *Trichoderma* spp. dan fungisida iprodione dalam menghambat pertumbuhan jamur patogen *F. oxysporum*.

Penelitian ini dilakukan di Laboratorium Mikologi dan Fitopatologi Fakultas Biologi Universitas Jenderal Soedirman selama 4 bulan (Juli – Oktober 2023). Penelitian ini dilakukan menggunakan metode eksperimental dengan Rancangan Acak Lengkap (RAL). Variabel bebas berupa dosis fungisida 0, 5, 10, 15, 20, dan 25 ppm serta jenis isolat *Trichoderma* spp., sedangkan variabel terikat berupa pertumbuhan miselium *Trichoderma* spp. dan *F. oxysporum*. Parameter utama yang diukur berupa diameter koloni *Trichoderma* spp. dan *F. oxysporum*, luas koloni *F. oxysporum*, serta parameter pendukung berupa pH medium. Data yang diperoleh dianalisis menggunakan analisis varian (ANOVA) dan diuji lanjut menggunakan uji Beda Nyata Terkecil (BNT) dan uji Duncan dengan bantuan *software* SPSS.

Hasil penelitian menunjukkan *Trichoderma* spp. kompatibel dengan fungisida iprodione pada dosis 0-5 ppm. Dosis efektif perlakuan tunggal fungisida iprodione dalam menghambat pertumbuhan jamur patogen *F. oxysporum* terdapat pada dosis tertinggi yaitu 25 ppm. Kombinasi jamur *Trichoderma* spp. dan fungisida iprodione secara *in vitro* dapat menghambat pertumbuhan jamur patogen *F. oxysporum* dan lebih efektif dibandingkan perlakuan tunggal penggunaan fungisida dengan nilai hambatan relatif sebesar 86,61%-96,40%.

Kata Kunci: *fungisida sintesis, Fusarium oxysporum, metode kombinasi, Trichoderma* spp.

SUMMARY

Fusarium oxysporum is a pathogenic fungus that causes fusarium wilt disease in plants. This pathogen is a limiting factor in the productivity of several horticultural crops because it can cause crop failure. Continuous control of fusarium wilt using synthetic fungicides can cause environmental pollution and the emergence of pathogen resistance to fungicides. Use of biological control agents *Trichoderma* spp. which is antagonistic to pathogens, is an environmentally friendly control alternative. Apart from using biological control agents, combination control methods between fungicides and antagonistic fungi have also begun to be developed. This combination method may be more effective in controlling pathogens than the use of a single control agent. This research aims to determine the effective dose of compatible fungicide iprodione on the growth of *Trichoderma* spp., determine the effective dose of iprodione fungicide in inhibiting the growth of *F. oxysporum*, and determine the effect of using a combination of *Trichoderma* spp. and the fungicide iprodione in inhibiting the growth of *F. oxysporum*.

This research was conducted at the Mycology and Phytopathology Laboratory, Faculty of Biology, Jenderal Soedirman University for 4 months (July – October 2023). This research was conducted using experimental methods with a Completely Randomized Design (CRD). The independent variables were fungicide doses of 0, 5, 10, 15, 20, and 25 ppm and the type of *Trichoderma* spp. isolate, while the dependent variable was the mycelium growth of *Trichoderma* spp. and *F. oxysporum*. The main parameter measured was the diameter of the *Trichoderma* spp. colony. and *F. oxysporum*, *F. oxysporum* colony area, as well as supporting parameters in the form of medium pH. The data obtained were analyzed using analysis of variance (ANOVA) and tested further using the Least Significant Difference (LSD) test and Duncan's test with the help of SPSS software

The results showed that *Trichoderma* spp. compatible with the fungicide iprodione at a dose of 0-5 ppm. The effective dose of a single treatment of iprodione fungicide in inhibiting the growth of *F.oxysporum* is found at the highest dose, namely 25 ppm. A combination of *Trichoderma* spp. with the fungicide iprodione by *in vitro* it was proven to inhibit the growth of *F. oxysporum* and was more effective than a single treatment using fungicide with a relative inhibition value of 86,61%-96,40%.

Keywords : *combination method, Fusarium oxysporum, synthetic fungicide, Trichoderma* spp.